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The background of the cover is a photograph of numerous purple flowers, likely fireweed, with green foliage. The flowers are in various stages of bloom, with some showing distinct five-petaled structures. The overall tone is natural and somewhat soft, with a focus on the vibrant purple color.

Responsible Actions: **A Plan for Alberta's Oil Sands** Annual Progress Report 2010

Alberta is home to the third-largest proven crude oil reserve in the world. The oil sands are the key to Alberta's economic future, and the Government of Alberta is committed to developing this resource in a responsible and environmentally sustainable way. The growing demand for this resource has brought about a number of challenges and growth pressures related to oil sands development. *Responsible Actions: A Plan for Alberta's Oil Sands* is the Government of Alberta's 20-year strategic plan to balance development with environmental protection, social responsibility, and economic success. The strategic plan focuses on a range of activities in Alberta's oil sands areas such as the environment, research and innovation, community infrastructure, cumulative effects, Aboriginal consultation and enhanced quality of life.

In the two years since the release of *Responsible Actions*, over 50 projects and initiatives reflected in the strategic plan have made steady and, in some cases, significant progress. Additional policies and processes have been established, Alberta's oil sands communities are further developing, and government's commitment to clean energy technology continues.

The 2010 Annual Progress Report looks at important achievements and activities from year two of the strategic plan. The government remains committed to the vision set out by *Responsible Actions* – one of economic growth, green technology and innovation, and enhanced quality of life.

Electronic copies of *Responsible Actions* and the *Implementation Plan* are available at www.treasuryboard.alberta.ca.

For more information and videos about the oil sands, visit www.oilsands.alberta.ca.

1 Develop Alberta's oil sands in an environmentally responsible way.

The following progress has been made in 2010 in support of Strategy 1:

- To meet the goals of Alberta's Climate Change Strategy to reduce emissions, while also allowing the economy to continue to grow and provide jobs for Albertans, government made significant progress in negotiating the final funding agreements with four projects under the \$2 billion Carbon Capture and Storage (CCS) Funding Program. The four projects are:
 - Quest Project (Shell Canada, Chevron Canada, Marathon Oil Sands);
 - Project Pioneer (TransAlta, Alstom, Capital Power, Enbridge);
 - Alberta Carbon Trunk Line (Enhance Energy, Northwest Upgrading); and
 - Swan Hills Synfuels (Swan Hills Synfuels).

The Quest Project and the Alberta Carbon Trunk Line will reduce emissions in the oil sands upgrading process.

- Alberta passed the *Carbon Capture and Storage Statutes Amendment Act* to support CCS deployment. The Act provides the authority for the Government of Alberta to assume the long-term liability for carbon dioxide (CO₂) storage sites and clarifies that the Crown owns the pore space into which CO₂ will be injected.

Alberta is currently conducting a Regulatory Framework Assessment that will examine the current environmental, safety and assurance requirements, as well as those from other jurisdictions, to determine if they meet the needs for the large-scale capture, transport and geologic storage of CO₂. This will contribute to the creation of a world-class regulatory system that will ensure CCS technology is used safely and effectively in Alberta.

- The Land-use Framework is a comprehensive approach to planning for the management of lands and natural resources to achieve Alberta's long-term economic, environmental and social goals. Under the Land-use Framework, the Lower Athabasca Regional Advisory Council provided advice to the government on the development of the regional plan through the Lower

Athabasca Regional Advisory Council's Advice to the Government of Alberta Regarding a Vision for the Lower Athabasca Region.

The Lower Athabasca Regional Advisory Council addressed areas including air, water, biodiversity and land through recommendations including a five-category land-use classification system:

- agriculture,
- conservation,
- mixed-use resource (including oil sands),
- population centres, and
- recreation and tourism.

The Government of Alberta consulted with Albertans and stakeholders on the Council's advice document throughout September and October 2010. The feedback was reviewed and considered in the development of the Draft Lower Athabasca Regional Plan, which is currently undergoing a final phase of consultation.

- Air quality, water quality, and groundwater management frameworks for the Lower Athabasca Region, including triggers and regional ambient air and water quality limits, are under development. Work in 2010 included conversations with key stakeholders about the frameworks and public consultation on the Lower Athabasca Regional Plan Regional Advisory Council's vision document.
- The Government of Alberta is developing a Tailings Management Framework that aims to minimize fluid tailings storage, optimize water management and more quickly reclaim tailings ponds. This framework is targeted for completion in 2012.
- An enhanced system for tracking and reporting milestones associated with disturbance and reclamation of oil sands mining operations has been developed. Strengthened reporting on reclamation progress will increase clarity for industry, government, and the public; enhance the ability to measure and report industry performance against reclamation plans; and provide the province with the ability to cross-reference security information against mine liability

and reclamation status. Incremental implementation of the reporting system began in 2010, and is expected to be fully developed by early 2012.

Progress was also made on other aspects of the reclamation strategy including updating the province's reclamation certification policy and mine financial security program.

- Implementation of the Industrial Heartland management frameworks are underway:

Water: Progress was made in 2010 towards developing a solid science base for water on the North Saskatchewan River. Decision support tools such as water quantity and quality models were constructed, documented and are now operating. Additionally, a jurisdictional review on the governance of water management systems was started in 2010 and is ongoing.

The Groundwater Management Framework has been reviewed by stakeholders. This information will be used to strengthen the Government of Alberta's approach to water management in the Industrial Heartland.

Air: Progress was made in 2010 on the Air Management Framework for the Capital Region and Industrial Heartland. Regional stakeholders were reconvened to continue developing a solid science base for air and to apply the principles and process used to develop the Lower Athabasca Region Air Quality Management Framework to air management in the Capital Region.

Land: Regional wetland management planning in the Industrial Heartland area continued and study results were shared with regional stakeholders.

- Progress was made in 2010 on the development of a provincial Climate Change Adaptation Strategy. Hydro-climatic variability studies were completed on major river basins in the province to determine current and future water supply, demand and deficits. Alberta Environment and Alberta Sustainable Resource Development have also completed climate change risk assessment projects and supported them with adaptation strategies. These projects will serve as pilots to inform the two-phased government-

wide risk assessment project, which was initiated in October 2010. The risk assessment project will result in the completion of climate change risk assessments in seven Government of Alberta departments and will be supported with department-specific adaptation strategies. These on-going projects will lead to the completion of a broader provincial adaptation strategy by the fall of 2011, which will in turn address priority risk areas, define leadership roles, and identify long-term research needs to increase Alberta's ability to adapt to climate change risks and vulnerabilities.

- A project on thermal in situ requirements for water measurement, reporting and use was conceived as a joint directive between Alberta Environment and the Energy Resources Conservation Board. This initiative has since been re-assessed and an alternative option is under consideration. The option includes the development of a separate Alberta Environment guidance document that focuses on the Water Conservation and Allocation Policy for Oilfield Injection, and would provide consistent and coordinated guidance to operators and regulators on criteria considered when making water allocation decisions at thermal in situ schemes.
- The Non-Saline Groundwater in Contact with Bitumen Policy development process is ongoing.
- A review of the current Environmental Assessment process continued over 2010. It is intended to reflect the new focus on cumulative effects management on a regional scale and improve overall efficiency and effectiveness of project environmental impact assessments.
- Consideration of the best available technology economically achievable is ongoing and is part of the overall policy development process.

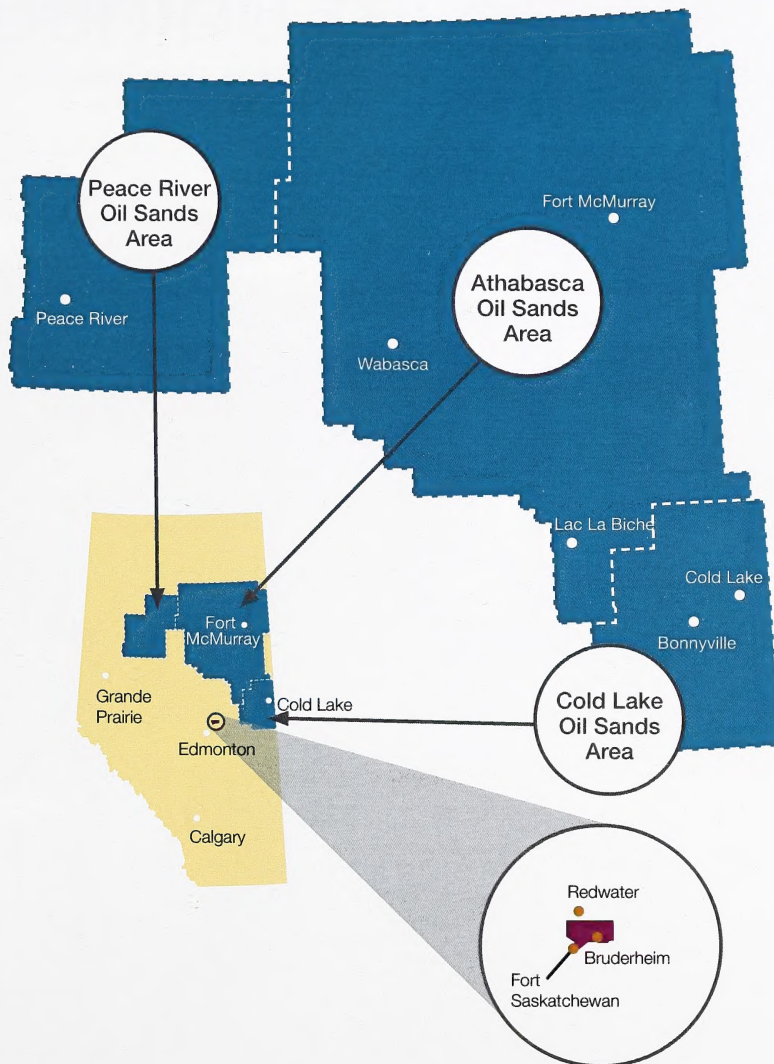
For more information about Alberta's Clean Energy Future, including videos about water and Carbon Capture and Storage, visit www.oilsands.alberta.ca/cleanenergyfuture.html.


Find out more about wildlife and biodiversity in the oil sands at www.oilsands.alberta.ca/wildlife.html.

Alberta's Oil Sands Regions and Industrial Heartland

Legend:

- Oil Sands Areas
- Industrial Heartland



A woman with curly blonde hair, wearing a bright green hard hat with the 'syncrude' logo, safety glasses, and a high-visibility yellow vest over a black long-sleeved shirt and blue jeans, stands leaning on a rustic wooden fence. She is looking upwards and to the left. The background features a field of green plants and yellow wildflowers, with a dense line of evergreen trees in the distance under a blue sky with scattered white clouds.

“We’re returning entire ecosystems back to the landscape.”

TANYA RICHENS, Reclamation Approvals
Specialist with Alberta Environment

The big picture behind reclamation

TANYA RICHENS, Reclamation Approvals Specialist with Alberta Environment, knows what it takes to turn a mine into a working, breathing, natural habitat.

“Reclamation is so complex. It’s integrated. You get to work on everything – soils, vegetation, water, wildlife. It’s a holistic perspective,” she says. “We’re returning entire ecosystems back to the landscape.”

Since joining Alberta Environment in 2004, Tanya has had an opportunity to witness first-hand the gains made in the field of oil sands mine reclamation.

“When I stand on Gateway Hill (Syncrude’s first certified reclaimed site) and see how much it has changed in the ten years that I’ve been working in the oil sands, I’m excited. You can see that the work matters,” says Tanya.

“Take a look at Suncor’s Pond 1; there are trees planted, rock piles and woody debris for animal habitat, and wetlands being developed. It used to be a tailings

pond – actually, the first tailings pond in the region – and the reclamation activities that have occurred over the past year have transformed it.”

Industry is legally obligated to reclaim all disturbed land to a productive state; however, mines are often in operation for decades and reclamation activities can therefore take many years to complete. Progressive reclamation practices involve starting reclamation activities before mine operations are complete – basically getting a head-start on one section of the mine site rather than waiting until the end of the mine’s life cycle. Reclamation and closure plans must be submitted and approved by Alberta Environment for every oil sands mining operation.

Tanya’s main responsibilities are coordinating and receiving applications, plans, and reports from industry on their conservation and reclamation activities at oil sands mine sites. She works with Alberta Sustainable Resource

Development and the Energy Resources Conservation Board to review applications, draft approvals and coordinate operational activities including reviewing and approving reports and plans. She’s also a company’s primary Alberta Environment contact for reclamation approvals, offering a one-window approach to ensure not only consistency, but a familiar face to help maintain relationships.

“Building relationships with industry using openness and trust is how we are successful,” says Tanya. “Reclamation is critical to our environment. We are in it together because we all want reclamation of the oil sands to be successful.”

Visit www.environment.alberta.ca for more information about reclamation.

For a video about reclamation, visit www.oilsands.alberta.ca/reclamation.html.

2

Promote healthy communities and a quality of life that attracts and retains individuals, families, and businesses.

The following progress has been made in 2010 in support of Strategy 2:

- Building for the future includes preparing for future growth, and in Fort McMurray and the Athabasca Oil Sands Area this means making more serviced land available for sale for developers to build homes. More people will be able to live in the region as the 1,000 acre Parsons Creek community becomes home to an estimated 24,000 residents in 8,000 homes. The parcels are expected to be developed within two years. The Government of Alberta is investing \$166 million to help develop the community, and proceeds from the land sales will be re-invested in the community by the Government as schools, roads and other infrastructure are developed. It is anticipated that the Parsons Creek community will be developed in 5 phases. The closing date for the sale of Phase 1 parcels concluded in February 2011. Future phases will come on sale as quickly as possible.
- Alberta's Traffic Safety Plan: Saving Lives on Alberta's Roads is a comprehensive strategy designed to reduce traffic-related deaths and injuries in the province. Implementation of the Traffic Safety Plan began in 2007, and already there is an overall reduction in the total number of people killed and injured on Alberta roads. In 2009 compared to 2006, the number killed and injured has decreased by more than 25 per cent.

Alberta's sheriffs, financed by the Alberta Solicitor General and Public Security, help to enforce the Traffic Safety Plan. The sheriffs work side by side with the RCMP in integrated traffic units, and carry out safety measures such as speed monitoring along Highway 63.

Work is progressing on the development of the next Traffic Safety Plan 2011-2015, which will include strategies developed from an internationally recognized safer-systems approach to further address the safety of drivers, vehicles and roads in Alberta. This safer-systems approach has had proven results and will be implemented as a national strategy in Canada. This approach will save additional lives on Alberta roads including in the oil sands regions.

- A Comprehensive Regional Infrastructure Sustainability Plan (CRISP), which establishes a long-term blueprint for future infrastructure development based on anticipated production rates and associated population growth, was released for the Athabasca Oil Sands Area. Input was sought from stakeholders in the area including municipalities, community organizations including Keyano College and industry, as well as First Nations and Métis through a series of workshops, meetings, and public open houses. A CRISP for the Cold Lake Oil Sands Area is currently underway.
- Work is continuing on the Urban Development Reserve project with several key Government of Alberta departments participating with the Regional Municipality of Wood Buffalo. Data is being gathered to determine the suitability of land for urban development. The plan will result in a process for the timely release of Crown land which will ultimately incorporate municipal development plans and CRISP. This will establish an adequate and secure supply of land for urban expansion to assist with the orderly development of the oil sands. This initiative will help manage costs and create certainty, and may be applicable in other high growth communities in the province that are surrounded by Crown land.
- The Social and Infrastructure Assessment Model (SIAM) was completed in 2010. SIAM was developed to help the Government of Alberta assess the demand for new physical infrastructure and social services arising from future increases in oil sands production, employment and overall population. Work is continuing to examine how the SIAM model can be used to support CRISP.
- The Government of Alberta is committed to working with Alberta residents to better understand their health concerns. There is a commitment to understand the health status of populations living in communities influenced by industrial development.

Did you know? The newly developed Parsons Creek community in the Regional Municipality of Wood Buffalo will house an estimated 24,000 residents in 8,000 homes.

- An important part of promoting healthy communities involves ensuring that children in Alberta's north have access to a world-class education system. Northern communities have traditionally struggled with teacher recruitment, and in response the Government of Alberta has developed several strategies to attract and retain teachers in these communities. One such initiative is the Northern Student Teacher Bursary Program, which is in its second year. Working with the Northern Alberta Development Council, the Government is providing financial support to post-secondary students who are interested in teaching in northern Alberta communities. Students who receive two years of bursary funding will, upon graduation, teach in one of Alberta's northern school jurisdictions for three years. This initiative helps address one of the main challenges of Alberta's northern communities, and will increase training, recruitment, and retention of teachers in the north.
 - Preparing students for the world of work by providing opportunities to explore their interests in technology and career-oriented courses is the focus behind Alberta Education's Career and Technology Studies (CTS) program. Revised and fully implemented in the 2010-11 school year, CTS enables schools to design unique programs that meet the needs of students and take advantage of available community resources. Courses are grouped together in five clusters, including "Natural Resources" and "Trades, Manufacturing & Transportation."
- In addition to providing students with the opportunity to discover their passions, the CTS program allows them to develop technology-related skills; enhance employability skills; and prepare them for adult roles in the family, community, workplace and/or further education.
- The Government of Alberta has identified the need to increase the number of specialty CTS teachers, particularly in northern communities. The Career and Technology Studies (CTS) Bridge to Teacher Certification Program, introduced in 2010, addresses the need for qualified, technical career specialists such as certified journey people, health-care professionals and information technologists to pursue a career in the teaching profession. The program provides an opportunity for certificated tradespeople, health care professionals and information technologists to complete a teacher preparation program while working in a classroom. These teachers, many of whom are trades and journey people, can provide students in Alberta's northern communities with a unique and personal perspective on the oil sands development activities in their region.
 - A workplace health and safety plan was developed to support workers. The plan included posting the safety records of all Alberta companies online, updated compliance and enforcement procedures and hiring more occupational health and safety officers.
 - The Safe Communities Innovation Fund supported two new safe communities projects in the Regional Municipality of Wood Buffalo:
 - "Learning through the Arts," which provides a broad range of services and support to help Aboriginal youth improve school attendance and performance, and steer them away from gang-related activity; and
 - A new crime prevention and reduction plan for the Regional Municipality of Wood Buffalo that will focus on safe civic and public spaces.

3

Maximize long-term value for all Albertans through economic growth, stability, and resource optimization.

The following progress has been made in 2010 in support of Strategy 3:

- Bitumen royalty-in-kind and other value-added initiatives are intended to add value to hydrocarbon resources, including bitumen, diversify Alberta's economy, increase resource revenues and create jobs in the province. The following activities are underway to further support this approach:
 - To maximize the potential for Alberta to increase value-added activities and cleaner energy development, work is being completed to leverage bitumen royalties through developing value-added products. The Government of Alberta completed a Request for Proposal process and negotiations have concluded with the selected party to process royalty bitumen within Alberta.
 - The Government of Alberta has developed bitumen royalty-in-kind implementation alternatives and will consult with stakeholders in 2011 and 2012 to finalize the royalty design and implementation framework.
 - The Government of Alberta has developed and refined a governance and organizational structure for a Crown agent to market bitumen royalty-in-kind.
 - The Crown initiated several projects to better understand the opportunities available to leverage Crown barrels of bitumen royalty-in-kind in the future. These initiatives include an evaluation of the North American refined product market. A team has been established by Alberta Energy, Finance and Enterprise and International and Intergovernmental Relations to investigate options to gain west coast tide water access for oil sands products.
- The Government of Alberta sees increasing tidewater access and diversifying to Pacific Rim markets as a significant benefit to Alberta's oil industry. Enbridge filed its Gateway facilities application in May 2010, and the National Energy Board is expected to set a hearing schedule in 2011. The Government is monitoring the process and will be filing evidence supporting the economic benefits. The Government is also chairing a panel to support its position. Once the process gets underway, it is expected to continue for a period of at least one year.
- A multi-use corridor strategy for Alberta is being developed. The strategy will support regional growth for the future development of needed provincial transportation and energy infrastructure. The Lower Athabasca Regional Advisory Council provided advice on general locations for major transportation and utility corridors in the region. This advice was considered by the Alberta government during the drafting process of the Draft Lower Athabasca Regional Plan.
- A Short-Term Employment Forecasting tool was developed to better forecast labour shortages. The methodology will help create a list of occupations under pressure in the short term, from one to three years. This list will assist government, contractors and partners in making decisions and taking actions to ease labour shortages in Alberta.
- To validate future workforce trends and challenges, as well as identify actions required by industry and government to address gaps, the Government of Alberta hosted a Minister's Forum in October 2010 with 120 senior representatives from a range of industry sectors, labour and government departments. The gathered information will assist the Government and stakeholders with future labour force planning, and will act as a catalyst for continued collaboration and cooperation in addressing these issues throughout the province, including in the oil sands regions.
- Through funding from the Government of Alberta, the Athabasca Tribal Council developed a Work Culture Attraction and Retention DVD targeted to Aboriginal people exploring work opportunities in the oil sands sector, and employers looking to recruit. The DVD looks at the impact of living away from home, life in work camps, making informed choices regarding work in the oil sands sector, coping strategies and cultural diversity in the workplace.

Did you know? Almost half of the total employment in the Wood Buffalo-Cold Lake region is driven by the mining, oil and gas, wholesale/retail trade and construction industries. Oil sands development has led to numerous major projects, which have increased both the region's overall population and the total number of people employed. In November 2010, the Government of Alberta's Inventory of Major Projects identified 56 oil sands projects valued at almost \$112 billion, which was 58 per cent of the total dollar value for all projects listed in the inventory.

- A number of First Nations and Aboriginal Training to Employment Partnership agreements have been developed between the Alberta Government, the Athabasca Tribal Council, Rupert's Land Institute (formerly the Métis Nation of Alberta Labour Market Unit) and industry. The goal of these partnerships is to address Aboriginal labour pool training needs and meet labour market demand in the region.
- Industry, government and stakeholders have partnered to develop a Local Opportunity Centre in the community of Conklin, which is located within the Regional Municipality of Wood Buffalo. The centre provides career, employment and entrepreneurship development for local and surrounding area Aboriginal people, and supports employers with attraction and retention strategies and labour market information.
- In 2010, the MLA Committee on the First Nations, Métis and Inuit Workforce Planning Initiative submitted a report and recommendations to the Ministers of Employment and Immigration and Aboriginal Relations. The overall goal of the recommendations is to increase the participation of Aboriginal people in Alberta's workforce and economy.
- The Government of Alberta continued to engage with policy makers, government agencies, investors, corporations and others in Canada, the United States and abroad. The focus is to build understanding of Alberta's ability and commitment to manage the responsible development of our secure, reliable and geopolitically important energy resources.
- To further support Alberta's leadership role in resource development and continue to maintain Alberta's strong commitment to environmentally responsible energy development, the regulatory system for upstream oil and gas and in situ oil sands has been further aligned and enhanced. The Regulatory Alignment Project was initiated in early 2009 to increase the effectiveness, efficiency, and coordination in the current regulatory system. The Regulatory Alignment Project provided the foundation for the work being completed through the Regulatory Enhancement Project, which is currently underway and will ensure Alberta's regulatory system is modern, efficient, performance-based, and competitive. The Regulatory Alignment Project was completed in the winter 2010 and resulted in the following near term enhancements that will improve the operational components of the current regulatory system:
 - The Upstream Oil and Gas Authorizations and Consultation Guide has been developed to provide industry with a central reference tool for upstream oil and gas development activities. It will assist companies to increase their understanding of Alberta's requirements.
 - Regulatory enhancements were made to further support timeliness and certainty of remediation, abandonment, reclamation and reclamation certification for upstream oil and gas wells and well sites.
 - Administrative procedures have been established to increase coordination of regulatory processes and sharing of information between the Energy Resources Conservation Board and Alberta Sustainable Resource Development for First Nations consultation.
 - To create efficiency while maintaining environmental, safety and resource recovery standards, the current in situ oil sands regulatory authorization function was optimized.

The *Upstream Oil and Gas Authorizations and Consultation Guide* can be viewed at <http://authorizationsguide.ercb.ca/>.

4

Strengthen our proactive approach to Aboriginal consultation with a view to reconciling interests.



The following progress has been made in 2010 in support of Strategy 4:

- Alberta's First Nations Consultation Policy on Land Management and Resource Development is undergoing a scheduled review. The review will continue to ensure that resources in the province are developed in such a way that respects Treaty rights and meets legal obligations, while creating a more confident business and investment climate.

The comprehensive review process has included more than a year of gathering valuable input from First Nations, industry and municipal representatives. Alberta will complete the review in 2011.

- Alberta is developing a new online mapping initiative to assess the geographical areas where First Nations may have an interest in being notified and consulted about their present-day use of Crown land.

The government is working with First Nations across the province, offering them opportunities to be heard regarding their geographical areas of interest for potential inclusion on the map. To date, 23 of 48 First Nations in Alberta are participating in the initiative, and the project is on track to engage the remaining First Nations by 2012.

The result of this initiative will be a set of online maps, created and updated by Alberta with First Nations' input. The standardized maps will help guide important provincial Crown consultation decisions for government, industry and First Nations by identifying who to consult on specific resource development projects.

- The historic Protocol Agreement on Government-to-Government Relations, signed in 2008, commits the Premier of Alberta to meet at least once a year with Alberta's three Treaty Grand Chiefs and Vice Chiefs to discuss matters of mutual interest such as resource consultation. Under the agreement, the Grand Chiefs, Vice Chiefs and Alberta's ministers responsible for consultation met three times in 2010 to formally discuss continuous improvements to the First Nations consultation process.

- Relationships built with First Nations through the Protocol Agreement have also led to the revitalization of an existing Alberta First Nations sub-table. A Consultation Policy review sub-table has now been forged between the parties with Treaty 6, 7 and 8 representatives working with Aboriginal Relations officials to address key issues challenging the effectiveness of the First Nations consultation process.
- Initial planning has begun on a pilot project with Métis settlements to obtain baseline data measuring how cumulative impacts of resource development may impact Settlement lands. A working group of Alberta Aboriginal Relations officials has been established to identify the issues and a possible approach. As per the commitment in Responsible Actions, the project is expected to be completed by 2019.

There are 18 First Nations and 6 Métis Settlements in Alberta's three oil sands areas:

First Nations

Woodland Cree	Fort McKay	Beaver Lake
Duncan's	Fort McMurray	Cold Lake
Whitefish	Chipewyan Prairie	Whitefish Lake
Loon River	Bigstone Cree	Saddle Lake
Mikisew Cree	Peerless Trout	Kehewin Cree
Athabasca	Heart Lake	Frog Lake
Chipewyan		

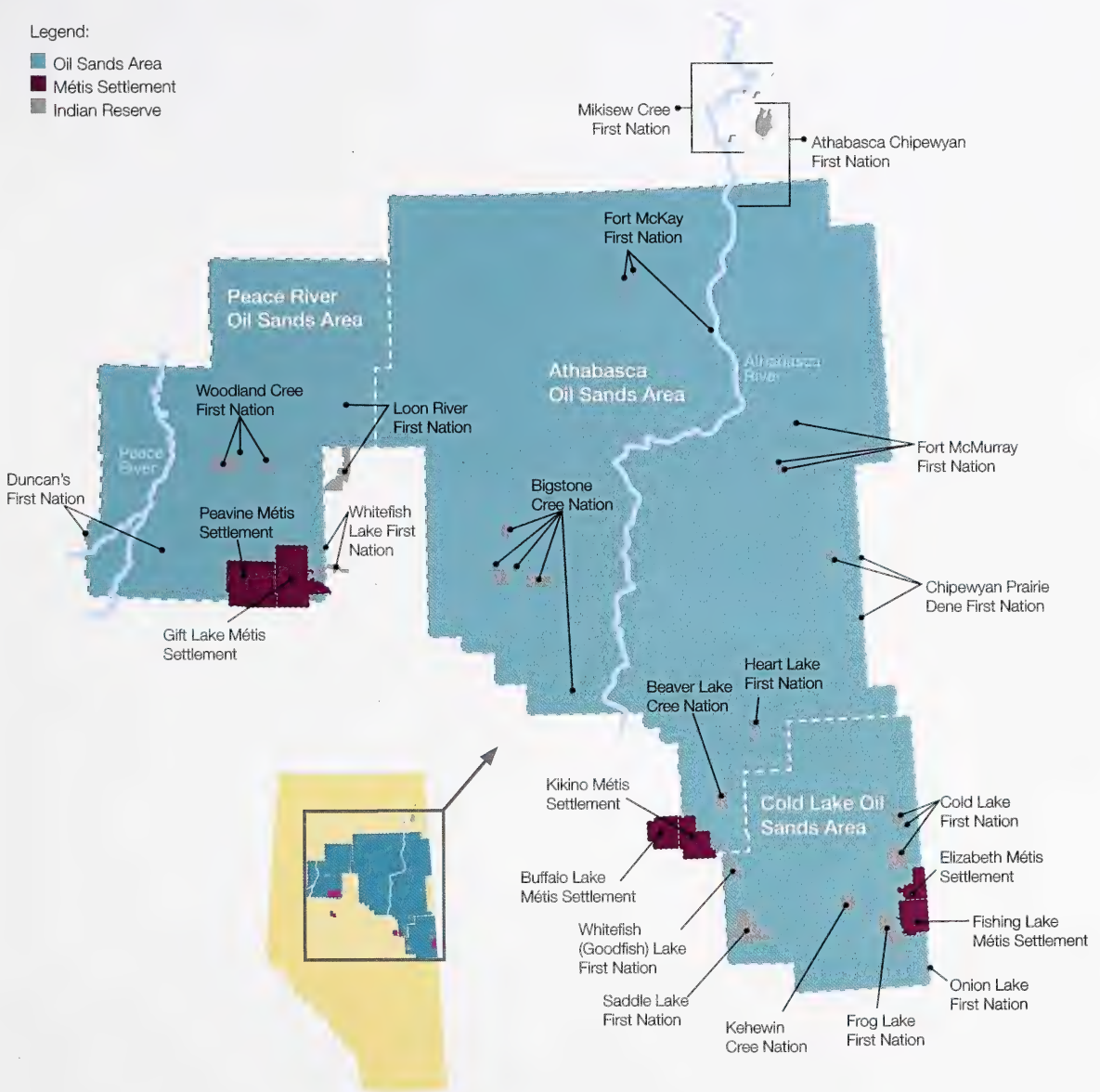
Métis Settlements

Peavine	Kikino	Fishing Lake
Gift Lake	Buffalo Lake	Elizabeth

First Nations Reserve Lands and Métis Settlements within or adjacent to the Oil Sands Regions

Legend:

- Oil Sands Area
- Métis Settlement
- Indian Reserve



Many major oil sands companies have Aboriginal employment policies to recruit local residents. About 10 per cent of the oil sands workforce is Aboriginal.



Enhancing Aboriginal consultation in the oil sands

Alberta is home to one of the largest, youngest and fastest-growing Aboriginal populations in Canada. An estimated 23,000 Aboriginal people live in the province's three oil sands areas, comprising of 18 First Nations and six Métis Settlements.

Aboriginal people continue to participate in traditional activities in the oil sands areas and have significant ties to industry, either through direct employment or service contracts. Aboriginal consultation, including a sound process to balance different stakeholder interests, is a vital component of Alberta's long-term strategy for the oil sands.

Improving the process

Alberta was the first province in Canada to develop a consultation policy. The Government of Alberta's First Nations Consultation Policy on Land Management and Resource

Development was introduced in 2005. Associated guidelines for policy implementation were released in 2006 and updated in 2007. With input from First Nations, industry and municipalities, the Consultation Policy and Guidelines are currently under review.

The Ministry of Aboriginal Relations leads Alberta's Aboriginal Consultation Initiative and Policy and Guidelines review. The review will help ensure the province's approach to consultation remains flexible, supports resolution of issues by strengthening the current consultation process, while satisfying the legal duty to consult. The goal is to build an effective First Nations consultation process to meet the needs of all parties including First Nations, industry and the province.

Alberta remains committed to strengthening Aboriginal consultation. With a view to reconciling stakeholder interests, this essential process will ensure the province maintains respect for Treaty rights and traditional uses while enhancing its global competitiveness in land management and resource development.

Alberta's First Nations Consultation Policy and Guidelines can be viewed at www.aboriginal.alberta.ca.

Successful consultation is characterized by:

- meaningful engagement, respect and trust;
- a reduction of adverse impacts to First Nations;
- the timely resolution of issues; and
- the development of long-term, positive relationships.

5 Maximize research and innovation to further support sustainable development and unlock the deposit's potential.

The following progress has been made in 2010 in support of Strategy 5:

- The *Alberta Research and Innovation Act* came into force on January 1, 2010, with a reconfigured structure for a provincially funded research and innovation system called Alberta Innovates. Alberta Innovates reduces complexity in the system, increases accessibility, nurtures partnerships and provides new opportunities to collaborate, coordinate and create new ideas and products.

To assist Alberta Innovates in achieving the above desired outcomes, Advanced Education and Technology developed the Alberta Research Capacity Planning Framework. The Framework is the result of coordinating efforts with the Campus Alberta Planning Framework and Alberta Innovates to achieve:

 - coordinated planning,
 - prioritized research, and
 - sustainable and effective use of resources to further benefit Albertans.
- Under the Alberta Innovates umbrella, Alberta Innovates - Energy and Environment Solutions (AIEES) is building on the work of the former Alberta Energy Research Institute and programs from the Alberta Ingenuity Fund in energy and water.
- AIEES works closely with key government ministries, partners with industry and collaborates with research and technology providers to reduce greenhouse gas emissions and the environmental footprint of Alberta oil sands development. To facilitate these outcomes, AIEES:
 - has signed a Memorandum of Understanding (MOU) with Alberta Energy, Environment, Finance and Enterprise, and Sustainable Resource Development to ensure that science and technology informs decision making and policy decisions;
 - continues to coordinate long-term and strategic investment in research and innovation on oil sands development. AIEES supports the Centre for Oil Sands Innovation, National Centre for Upgrading Technologies and AIEES/Alberta Innovates - Technology Futures Core Industry Program;
- is establishing closer ties with environmental sector associations and companies in Alberta and elsewhere. AIEES is initiating a Biodiversity Chair at the University of Alberta, and continues to provide project support to the Bocock Chair for Agriculture and Environment; and
- is providing technical and funding support for a number of oil sands-related recovery, upgrading and environmental technology development initiatives. AIEES is leading a Thermal In Situ Water Conservation Study to find an optimal water recycling technology with a minimal greenhouse gas emissions for Steam Assisted Gravity Drainage (SAGD) and other thermal in situ processes. AIEES is also investing in an oil sands tailings technology Roadmap and Action Plan, as well as two Carbon Capture and Storage projects related to oil sands.
- Several initiatives are underway to develop next-generation breakthrough oil sands recovery and upgrading technologies, including life cycle analysis, energy efficiency, tailings management and enhanced ecology. Research and development for the next generation of tailings management technologies continues. For example, AIEES is investing in:
 - new breakthrough gasification technologies that could significantly impact the oil sands industry and development;
 - evaluating a number of tailings management technologies; and
 - a number of recovery technologies including electrical heating, electromagnetic heating, and SAGD in carbonate reservoirs, through the Climate Change and Emission Management Corporation Fund.
- Alberta Advanced Education and Technology is working with the Alberta Innovates corporations and other stakeholders to foster an open innovation environment, with increased connections and flow of ideas among companies and between industry and post-secondary institutions.

More information about oil sands research and technology can be found at www.oilsands.alberta.ca/researchtechnology.html.



Did you know? Bitumen production is gradually moving from the traditional focus on mining to in situ production. The majority of Alberta's bitumen reserves are in situ, accounting for approximately 136 billion barrels of the 170 billion barrels of proven bitumen reserves. The Energy Resources Conservation Board has forecasted that in situ bitumen production will surpass mined bitumen production by 2015.



"We're at the leading edge of research in this area and so is the energy industry in its areas of expertise."

DR. JULIA FOGHT, Professor, Department of Biological Sciences, University of Alberta

Microbes in the mix

Using biology for a more sustainable energy industry

Alberta's energy industry operates on a huge scale. But at the microscopic scale, exciting research could lead to a more sustainable energy industry. Using microbes, some of the smallest living things on Earth, the University of Alberta's Dr. Julia Foght could shift some of the industry's processes from chemistry to biology.

Dr. Foght, a professor in the university's Department of Biological Sciences, has, along with two colleagues, submitted a patent application for the in situ conversion of bitumen or heavy oil into methane using naturally-occurring microbes called methanogens.

"Whether it's injecting the right microbes into a heavy oil deposit, or stimulating the growth of existing methanogens, we move part of the refining process underground. You could say we then harvest the methane, which is one of the cleanest hydrocarbon energy sources."

"In nature, microbes do the heavy-lifting in a lot of chemical conversions. We want to access this ability to reduce the energy and resource inputs that enable some industrial processes."

Another area of Dr. Foght's research could enhance water recycling in the oil sands and speed the reclamation process of tailings ponds. In 1985, she participated in the first microbial census of an oil sands tailings pond at Mildred Lake.

"We learned that naturally-occurring microbes, found in the tailings ponds, can act to increase the speed of settling of fine materials. The mechanisms at work are what my research team is trying to determine. This characteristic could allow oil sands producers to recycle water from tailings ponds at a more rapid rate, potentially reducing the amount drawn from the Athabasca River. It could also allow for tailings pond reclamation to begin sooner."

Her current area of research also includes the study of soil remediation in cold climates. "There are places, like de-commissioned gas stations, where soil has been contaminated. Microbial remediation could be an inexpensive way to return these lands to their communities."

Dr. Foght says the biggest challenge to getting these ideas

into commercial use isn't support from the industry or government, but the speed of change. "We're at the leading edge of research in this area and so is the energy industry in its areas of expertise. For example, we've just received new microbial genomic data from our partners at Genome Canada and the University of Calgary that changes our understanding of some fundamental principles in this area."

Dr. Foght notes that collaboration is the key to both research and making the results part of an industry's methods. "This kind of work absolutely depends on collaboration with industry, organizations, Alberta Innovates and other provincial and federal agencies."

Looking ahead, Dr. Foght sees potential for Alberta to become not just a user of microbes in industry, but also a knowledge provider. "I visited China, where their scientists are also interested in the potential we've discovered in Alberta."

More information about
Alberta Innovates is available
at www.albertainnovates.ca.

6

Increase available information, develop measurement systems, and enhance accountability in the management of the oil sands.

The following progress has been made in 2010 in support of Strategy 6:

- The Office of Statistics and Information has increased the volume and diversity of the province's official statistics, providing better information on topics that impact oil sands development such as Aboriginal issues, energy, environment, labour and population information. Specific examples include the Alberta River Water Quality Index, which comes from Alberta Environment official statistics and the Employment Rates for Off-reserve Aboriginal people, which comes from labour official statistics.
- Through the establishment of the Alberta Office of Statistics and Information, the Government of Alberta has enhanced the way it enables public access to statistics by being more transparent, consistent and cost effective.
- To improve the Government of Alberta's ability to make decisions through improving the quality, availability and management of geospatial information, and make this data more available to the public, the GeoDiscover Alberta program compiled and reviewed geospatial information for use in a public portal. The online comprehensive site was launched in January 2011.
- To increase public transparency, an online Oil Sands Information Portal is being developed to provide public information on the oil sands. The portal will include access to environmental monitoring and other information related to air, climate change, water, land, biodiversity and the amount as well as the age of reclamation and other information and data associated with oil sands development. Much progress was made in 2010 and the web portal is expected to be online in the summer of 2011.
- To support the sustainable development of Alberta's oil sands, a series of economic, social, and environmental performance measures were developed in 2010. Data collection has now commenced for these performance measures. Upon completion, information related to these measures will be reported publicly.



Did you know? Alberta's oil sands produce 1.6 million barrels per day, with 3.3 million barrels per day expected by 2019.



Desired outcome progress

The short, medium and long-term desired outcomes will be achieved through implementation of *Responsible Actions*.

The desired outcomes and progress have been updated and, where necessary, adjusted to reflect revised timelines and projects.

Short-term desired outcome progress

Short-term desired outcomes to be achieved by 2012: The oil sands are being managed strategically and regionally, which allows for the increased capability to achieve value-added and environmental goals.

The following will be achieved by 2012 through implementation of the objectives:

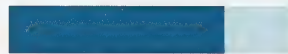
Desired Outcome

Progress achieved to date

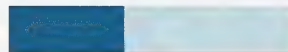
The environmental assessment review process is complete and supports cumulative effects management.



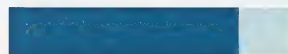
The Lower Athabasca Regional Plan is in place which supports regional planning including social, economic and environmental activities.



Sustainability of Alberta's biodiversity is established as part of regional plans.



Groundwater management frameworks for the Athabasca Oil Sands Area (mineable area), the South Athabasca Oil Sands Area (in-situ area), the Cold Lake Oil Sands Area, and the Industrial Heartland Area have been developed.



Regulatory requirements have been developed and implemented that specify criteria for the reduction of fluid tailings and deposits that are suitable for reclamation.



The regulatory requirements to increase the pace of reclamation in oil sands areas have been developed.



The Government of Alberta and the Cumulative Environmental Management Association (CEMA) Management Committee have redefined, clarified and redeveloped the CEMA partnership group.



A Comprehensive Regional Infrastructure Sustainability Plan (CRISP) is in place for each of the three oil sands areas.



A long-term land release process for Regional Municipality of Wood Buffalo is in place that accommodates the orderly development of infrastructure.



Planning for future community development in the oil sands areas includes green technologies, and environmentally sustainable and innovative urban design.



An assessment framework for social and infrastructure needs related to oil sands development is in place with a direct linkage to Regional Plans.



A Bitumen Royalty-In-Kind (BRIK) policy and program design is completed and a Crown Agent to handle future crown bitumen volumes is designated. BRIK is leveraged to develop value-added oil sands products.



A policy framework is in place for encouraging the use of bitumen upgrading by-products (petroleum coke, residue, off gases) for integrated value-added cluster development in Alberta.



A modernized, aligned and enhanced regulatory system for upstream oil and gas is in place that increases effectiveness, efficiency, responsiveness, and coordination across the regulator bodies.



Pilots for Aboriginal consultation are complete and the consultation policy is being implemented.



Initiative funding has been approved for all interested First Nations for the completion of comprehensive traditional use studies.



Substantial revisions to the *First Nations Consultation Policy on Land Management and Resource Development* are complete.



Implementation of *Alberta Innovates* is in place, which is a research and innovation framework that embraces a coordinated and integrated approach to research and the commercialization of technology, ensures excellence and positions Alberta to be a major player on the world stage.





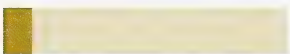







Outcome based performance measures have been developed and are being reported annually.



Medium-term desired outcome progress

Medium-term desired outcome to be achieved by 2020: New milestones for environmental stewardship are being met with development and full scale implementation of breakthrough technologies. Community growth is accomplished in a more proactive and planned manner. Industry growth is meeting production targets as determined by the Lower Athabasca Regional Plan, and oil sands contributions to Alberta's economy are strong.

The following will be achieved by 2020 through implementation of the objectives:

Desired Outcome	Progress achieved to date
The Lower Peace Regional Plan is in place which aligns land and natural resource policy, planning and decision making with respect to social, economic and environmental outcomes.	
The Conservation and Stewardship Strategy on private and public land is implemented.	
The effectiveness of other multi-stakeholder groups and associations have been strengthened and aligned with Government of Alberta directions for responsible oil sands development.	
Greenhouse gas emissions have decreased provincially as identified in <i>Alberta's Climate Change Strategy</i> .	
A policy and regulatory framework is developed that enables the large-scale deployment of carbon capture and storage across Alberta.	
Carbon capture and storage projects are implemented to reduce the impacts of industrial greenhouse gas emissions.	
Community growth is accomplished in a more coordinated, planned and proactive manner.	
Regional municipal service delivery and/or financing opportunities have been identified and assessed to facilitate effective allocation of resources to high growth areas.	
Long term land release processes for the Oil Sands Areas are in place that accommodates the orderly development of infrastructure.	
The Alberta Government has allocated Bitumen Royalty-In-Kind (BRIK) volumes, and a wider range of value-added products are produced in Alberta.	

Government policies are in place to encourage value-added and chemical cluster developments in the province that produce higher-value products from the bitumen raw resource. Clusters could include upgraders, refineries, and associated petrochemical and chemical industries.



The transparency of the market for Alberta's bitumen resource in the province is increased.



Contingent on favorable market conditions, oil sands industry growth is consistent with the regional plans developed through the Land-use Framework, and is expected to significantly contribute to further energy development in Alberta.



Raising awareness and understanding, both at home and abroad, of the oil sands resource and Alberta's commitment to its responsible development leads to informed attitudes and positions, as well as continued investment.



Core capacity for consultation has been established in all participating Alberta First Nations.



The Consultation and Regional Benefits Agreement or a similar initiative is in place.



Improved relationships and communication, as well as greater consistency between Federal and Provincial consultation processes and decision making have reduced land use conflicts.



Innovative new processes are in place that generates more effective dialogue, education and understanding among Aboriginal people, the Government of Alberta, and the federal government.



Land management decision making reflects objective data obtained from Aboriginal sources.



Current research and innovation initiatives, supported by Alberta Innovates are implemented on a commercial scale to support the sustainable development of the oil sands and other energy resources in Alberta.



Alberta's approach to open innovation has resulted in increased knowledge, intellectual property and skill transfer within its research and innovation system, and between academia, government and industry.



Outcome based performance measure results show improvement in social, environmental and economic aspects of oil sands development.



Reporting and data sharing is occurring for the oil sands in a planned manner with clear expectations and requirements for those parties involved.



Alberta official statistics are available and widely used within the Government of Alberta and by its partners.

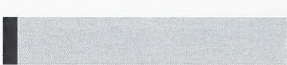


Long-term desired outcome progress

Long-term target to be achieved by 2030: Thirty per cent of the oil sands deposits are considered to be recoverable reserves, with a reduced overall environmental impact and maximized value. Significant value-added processing is occurring in the province and Alberta is recognized internationally as an important refined products and petrochemicals hub.

The following will be achieved by 2030 through implementation of the objectives:

Desired Outcome	Progress achieved to date
The best economically available technology is being used and is well integrated into industry planning.	<div></div>
Alberta has developed a world-scale hydrocarbon processing cluster based on the bitumen resource. Clusters incorporating best practice could include upgraders, refineries, and associated petrochemical and chemical industries.	<div></div>



Appendix: Related Government Strategies and Initiatives

Alberta's Action Plan Bringing Technology to Market

– <http://aet.alberta.ca/apps/actionplan/actionplan.asp>

Alberta Housing and Urban Affairs – Parsons Creek

– www.housing.alberta.ca/734.cfm

Alberta Innovates

– www.albertainnovates.ca

Alberta's Oil Sands

– www.oilsands.alberta.ca

Alberta's Traffic Safety Plan: Saving Lives on Alberta's Roads

– www.transportation.alberta.ca/3112.htm

Climate Change Strategy

– www.environment.alberta.ca/0909.html

Cumulative effects and the Lower Athabasca Regional Plan

– www.environment.alberta.ca/0890.html

First Nations Consultation Policy on Land Management and Resource Development

– www.aboriginal.alberta.ca/1.cfm

Land-use Framework and the Lower Athabasca Regional Plan

– www.landuse.alberta.ca

Provincial Energy Strategy

– www.energy.alberta.ca/Initiatives/strategy.asp

Regulatory Enhancement

– www.energy.alberta.ca/Initiatives/RegulatoryEnhancement.asp

Responsible Actions: A Plan for Alberta's Oil Sands

– www.treasuryboard.alberta.ca/ResponsibleActions.cfm

Responsible Actions: A Plan for Alberta's Oil Sands – Implementation Plan

– www.treasuryboard.alberta.ca/ResponsibleActions.cfm

Safe Communities Innovation Fund

– http://justice.alberta.ca/programs_services/safe/scif/Pages/default.aspx

Spirit of Alberta: Alberta's Cultural Policy

– www.culture.alberta.ca/culturalpolicy

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